FCCID: 2ABXZU-5296MM

RF Exposure evaluation

According to 447498 D01 General RF Exposure Guidance v06

4.3. General SAR test exclusion guidance

4.3.1. Standalone SAR test exclusion considerations

a) For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following: [(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR, [30] where
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation31
   - The result is rounded to one decimal place for comparison
   - The values 3.0 and 7.5 are referred to as numeric thresholds in step b) below

   The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 4.1 f) is applied to determine SAR test exclusion.

[30] This is equivalent to the formula written as: [(max. power of channel, including tune-up tolerance, mW)/(60/√f(GHz) mW)]·[20 mm/(min. test separation distance, mm)] ≤ 1.0 for 1-g SAR; also see Appendix A for approximate exclusion threshold numerical values at selected frequencies and distances.

eirp = pt x gt = $(EXd)^2/30$

where:

pt = transmitter output power in watts,

gt = numeric gain of the transmitting antenna (unitless),

E = electric field strength in V/m, --- $10^{[(dBuV/m)/20]}/10^6$

d = measurement distance in meters (m)---3m

So pt = $(EXd)^2/30$ x gt

RF Exposure evaluation

Copied from the FCC test report:

Quasi-Peak measurement of carrier						
Frequency	Level		Transducer	Limit	Margin	
MHz	dBuV/m		dB	dBuV/m	dB	
	V	H			V	H
902.3 (L)	87.1	75.0	27.6	94	-6.9	-19.0
915.36 (M)	87.2	71.2	27.8	94	-6.2	-22.8
927.7 (H)	87.8	74.3	27.9	94	-5.8	-17.7
Note: 50mV/m (94dBuV/m) for QP limit in band (902MHz to 928MHz). The transducer factor = antenna factor + cable loss - preamplifier. In band 902MHz to						

928MHz, preamplifier factor = 0 dB.

The Level = Read level + transducer factor.

H: Antenna polarization horizontal direction. V: Antenna polarization vertical direction.

The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes and choose the worst case of X orthogonal plane for the final measurement.

So E's max value@927.7MHz&3m=87.8dBuV/m
Field strength = 87.8 dBuV/m @927.7MHz&3m
Ant gain =0dBi ;so Ant numeric gain= -2.02 = 2.02, with opposite direction
So pt={ $[10^{(87.8/20)}/10^{6}$ x3$]^{2}$/30x(2.02) }x1000 mW = 0.365 mW, with opposite direction
min. test separation distance = 5 mm, since the min distance from the antenna to the outer = 20 mm.
So (0.365) mW/5mm)x √0.9277 GHz = 0.0703 <3
Then SAR evaluation is not required